



JO SCULTHORP

# CHROMIUM

Element Symbol: **Cr**

Atomic Number: **24**

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Upon receiving crocoite (lead chromate) samples in 1797, Vauquelin made chromium oxide by mixing the samples with hydrochloric acid. The following year he isolated metallic chromium by heating the oxide. The name of the element comes from the Greek word 'chroma', meaning 'colour', as many chromium compounds are brightly coloured.

As a metal, chromium is a grey metal with a high lustre that can be polished to a high shine. The most common ore is chromite, which is then reduced to produce the chromium metal. Chromium also causes the colours of some precious gemstones, including emeralds and rubies.

Chromium is a useful 'ingredient' in producing different metal alloys, and is a critical component of stainless steel. Unalloyed chromium is used in electroplating to cover metallic surfaces in a thin layer of metallic chromium, as both a protective and decorative coating.

Weapons found with the Terracotta Warriors in Xian, China may be the first known examples of using chrome to plate other metals to prevent corrosion. Although the figures date back to 210 BC, the bronze tips of weapons such as swords and crossbows show no signs of corrosion, as they were coated in a thin layer of chromium.

A range of chromium compounds are used for dyes and pigments (e.g. chromium(III) oxide is used to colour glass an emerald green colour). Chromium compounds are also used for quantitative analysis, as catalysts for other reactions and for cleaning laboratory glassware.

Chromium(III) is thought to play a biological role in the metabolism of fat and sugar. Chromium(VI) on the other hand is both toxic and carcinogenic, and use of compounds containing chromium(VI) is these days restricted.

Chromium-based treatments are commonly used to coat metals to prevent corrosion. However, these compounds can be highly toxic. CSIRO scientists have developed a new product which avoids the need for chromium-based products to prevent corrosion and rust.

*Provided by the element sponsor Sarah Lau*

## ARTISTS DESCRIPTION

I have depicted an audio cassette tape for the Chromium element. Chromium dioxide or chromium (IV) oxide is a synthetic magnetic substance used in the manufacture of magnetic tape emulsion. Chrome tape is considered by many to be the most perfect magnetic recording tape available.

This is due to the way in which the chromium dioxide crystals can be evenly and densely dispersed in the magnetic coating which leads to unparalleled low noise performance in audio cassette tapes

*JO SCULTHORP*